

to work for her, when she ceases to labor, and, remaining in-doors, lays all the eggs that produce the coming millions. The laborers are long-lived, so are the queens.

28th.—I extract from my journal: This morning I found the males where I left them last evening. The greater portion of them were still active, and seemed to be quite careless as to their fate. Hundreds were dead or dying. Great numbers had climbed up the little weeds, many of whom were dead, but still clinging by their jaws, which were fast gripped to some little leaf or twig. The females had buried themselves by the time it was dark last night, and, closing up their holes, remained shut in all night. But few of them had opened their doors and gone to work at an hour by sun this morning. The number of their holes is truly wonderful. I saw many places where there were at least fifty of their holes to the square rod, and northwardly they extended for miles. When these mother ants succeed in boring their holes to the depth of six or seven inches they close them up, and employ themselves widening the bottom of them a little, forming small cells for the purpose, as I suppose, of making room for the deposition of their eggs. They do not, as I can discover, need any food yet. At 5 P. M. of this day I visited the place again, and found the male ants all dead. They were drifted into the gullies by the winds into heaps, and thousands of them besides lay scattered over the ground. Some of the females were still engaged deepening their holes, and their little piles of black dirt were to be seen everywhere.

29th July.—A month has passed. I went round to-day and found that, in all those thousands of female ants, who made so brave a start excavating new homes, there was but one that was a success, and it was concealed with a little pile of trash. There may be more, but I did not find them, and the winds have swept away their little piles of dirt, so that there are no signs of them left. From some cause they are all gone. Eight or ten days after they had shut up their holes I dug up quite a number of them; found them looking well, but they had no eggs or anything else in the little cell. They seemed to be sleeping.

I have never witnessed similar assemblages in any other species of ant, though I have seen it often take place with the agricultural species.

Long Point, Texas, Oct., 1866.

Descriptions of some new species of Diurnal LEPIDOPTERA.

SERIES II.

BY TRYON REAKIRT.

26. NEONYMPHA LUPITA, nov. sp.

Female. Upper surface uniform dull brown, with a narrow, double, darker brown, marginal line.

Underneath paler; three narrow terminal lines on both wings, of which the interior is the broadest, and most clearly defined; a minute black ocellus near the apex of the primaries, ringed with pale brown; three transverse brown stripes on the same, between the middle and base; two extending from the costa to the inner margin, while the third and central one stretches over only one-third this distance.

Secondaries with three submarginal ocelli, black, encircled with yellowish brown, one near their apex, and the others close together, above the anal angle; three indistinct transverse lines above the middle, with several shorter ones towards the base. Expanse 1.25 inches.

Body of the same dull tint; antennæ ferruginous.

Hab.—"Mexico, near Vera Cruz." Wm. H. Edwards.

Orizaba. (Coll. Tryon Reakirt.)

27. PAPILIO ASTEROIDES, nov. sp.

Male. Upper surface black, marked nearly as in *Asterius*; the inner yellow 1866.]

macular row upon the fore wings is almost obsolete, except the spot upon the inner margin, which is prolonged into a dash.

Hind wings marked as in *Asterius* ♀, but the blue clouds between the yellow bands are reduced to small rounded patches, insensibly diminishing to the outer angle; that upon the abdominal margin is lunulate and covers a fulvous crescent, not ocellate as in *Asterius*; tail not so long as in that species; emarginations white; expanse 3.5–4 inches.

Below much paler; primaries with a series of submarginal rounded yellow spots, and between these and the cell another of large fulvous sagittiform spots; a minute yellow spot on the end of the cell; one, somewhat larger, above the origin of the fourth subcostal veinlet.

Secondaries as in *Astrivius*, with the exception of the anal mark, which is simply a lunule as on the upper surface, and of the existence of a very minute fulvous spot within the cell, rarely obsolete, always much less than the corresponding one in *Asterius*; the yellow emarginations are also considerably narrower than in that form.

Hab.—Mexico. Coll. Entom. Society.

A very remarkable approximation to our most common species of *Papilio*, and indeed the general similarity existing in color and form has been almost sufficient to induce me to regard it as only a singular aberration, or a well marked local race.

Upon a closer and structural examination, however, we discover the following points of difference in this most essential particular.

First, the antennæ of *Asterius* are fully a line longer than in the new type; secondly, the fourth subcostal veinlet is thrown off one-third nearer the cell than in our endemic species; thirdly, in it the cell is broader than in the corresponding ♂, and the disco-cellular veins of equal length; fourthly, upon the secondaries the upper disco-cellular does not form so great an angle with the second subcostal, and the intervals between the median veinlets are larger, consequently the cell is both broader and longer.

This adds a fourth member to that group of segregated forms, ranging over the largest portion of central and southern North America, and consisting heretofore of *Asterius*, *Aristor*, and *Indra*.

Mr. Wm. H. Edwards is in possession of a beautiful new species from Arizona, belonging to the same series, which I hope he will soon describe.

28. *LYCENA ISOLA*, nov. sp.

Upper surface brownish black, glossed with violet blue; a black terminal line, broadest at the apex of the fore wings, thence diminishing to the anal angle; a small rounded, submarginal black spot near the latter; fringe white.

Underneath dark ash grey: primaries with two submarginal, slightly waved whitish lines; interior to these a row of six large rounded black spots, all ringed with white; two white streaks at the end of the cell.

Secondaries with a submarginal row of indistinct brown spots, of which the three nearest the anal angle are black, the first and third irrorated with metallic golden-green atoms, and the third surmounted by a yellowish lunule; all the others are preceded by whitish crescents; above these there is a suffused white belt, and still farther, two double rows of waved and crenulated whitish lines; a small subcostal black ocellus near the base.

A narrow terminal black line edges the outer margin of the four wings; fringe ashy white. Expanse .88 inches.

Antennæ black ringed with white.

Hab.—"Mexico (near Vera Cruz)." Wm. H. Edwards.

29. *THECLA XAMI*, nov. sp.

Male. Upper surface drab brown tinged with olivaceous, costa and outer margin of primaries broadly margined with blackish-brown.

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Secondaries with a narrow terminal line, edged interiorly, at the anal angle, with a short white line; two tails, the outer short, and tipped with white, the inner one three times the length of the outer, and fringed exteriorly with white. Fringe brown.

Under side reddish brown, suffused with greenish and olivaceous, especially on the apical area of the fore wings and over the whole hind wings. A transverse white line, bordered interiorly by a ferruginous streak, runs from the outer third of the primaries' costa, nearly parallel with the outer edge, to the abdominal margin. Secondaries with a terminal white line, and a small black anal patch; the lower part of the area enclosed between those two white lines is strewn with violaceous ash-white atoms, and there are two prolongations of the inner white line, respectively down the first and second median veinlets, usually uniting with the ashy space below. Posterior to this line there are three oblong black spots encircled with white, and following the central of these a larger violaceous brown patch. Expanse 1.12 inches. Antennæ black, annulated with white, club ferruginous.

Female. Upper surface reddish ochreous; the black margins are much broader than in the *male*. Underneath the surface is more greenish; expanse 1.25 inches.

Hab.—"Mexico (near Vera Cruz)." Wm. H. Edwards.

30. . *THECLA ZOË*, nov. sp.

Male. Upper side brilliant, shining blue, a black border of moderate width on the primaries, broadest at the apex; narrower upon the secondaries, which have two tails, the inner being the longest and tipped with white; there is the usual smooth sexual spot at the end of the fore-wings' cell, and obliquely below, and connected with it a large black patch.

Underneath brown tinged with purplish; on the primaries a submarginal band of obsolete dashes and a sinuated median row of six black spots extending from the costa to the first median veinlet.

Secondaries with three transverse bands and lines; the first is composed of interrupted black spots and dashes, bordered posteriorly with pale silvery-blue; the second is a waved black line, above which is super-imposed a broad stripe of silvery-blue atoms, and the third is marginal and silvery blue; there is besides a large black anal patch, and a small black spot above and midway between the two tails, surmounted by a reddish crescent; also a large rounded black dot above the cell. Fringe brown; expanse 1.4 inches.

Body above glossed with lustrous blue; underneath brown, abdomen yellowish.

Hab.—"Mexico (near Vera Cruz)." W. H. Edwards.

31. *THECLA BARAJO*, nov. sp.

Female. Upper side shining greenish blue; costa of primaries, and a very broad outer belt, black; secondaries with a broad brownish-black outer margin, cut by a narrow, submarginal, white line; two tails, the fringe from the apex of the primaries to the lower of these, white; this has the anterior side fringed with black, and the posterior with white; hence to the anal angle the fringe is black.

Underneath light brown; the fore wings crossed between the middle and apex by four transverse white stripes, of which the first runs parallel with and close to the outer margin; the second starts near the apex, and in common with the other two, rising respectively at three-fourths and one-half the length of the costa, converges towards the inner angle; a short line running above the submedian vein unites the three; the third is bent very abruptly immediately before this junction.

Secondaries have two submarginal white lines, united at the outer angle and on the second and first median nervules; the upper one, in the space included between these two veinlets, is replaced by a black line surmounted

by a fulvous lunule; the lower half of the inner line is bordered interiorly by a narrow black line, and the enclosed spaces and outer margin below the upper tail are filled with black patches; there are four white lines, two from the costa, one from the base, and one from the inner margin, all converging towards and uniting above the fulvous lune; the first and last are edged posteriorly by a narrow black line, and the third and fourth are broadly interrupted by the submedian vein. Expanse 1.5 inches.

Body above glossed with greenish blue, beneath brownish; antennæ black with white annulations.

Hab.—"Mexico (near Vera Cruz)." Wm. H. Edwards.

32. *NISONIADES MEJICANUS*, nov. sp.

Upper side brownish black, a submarginal row of pale brownish spots on both wings; on the primaries an interior tortuous row of nine spots, of which the first five are pure white and well defined, the others are sometimes obsolete; a white discal spot.

Underneath paler, glossed with purple at the base of the primaries; their apex and the secondaries shining olivaceous brown; a row of five white spots runs from the costa of the primaries, and a white discal spot; the veins of the secondaries are prominently outlined in dark velvety brown; expanse 1 inch. Fringe brown.

Body and antennæ as in *N. Catullus*.

Hab.—"Mexico (near Vera Cruz)." W. H. Edwards.

A neotropical representative of our own *Catullus*. There are, in my collection, several new and allied South American forms, which replace this species upon the Amazons, and further southward; they will be described hereafter.

33. *PYRGUS MONTIVAGUS*, nov. sp.

Upper side dark olive brown; primaries—a marginal row of minute white spots, sometimes obsolete, followed by a submarginal series of larger ones; an irregular transverse, maculate band, composed thus: three oblong dashes from the costa, preceded by a small dot, then three rounded or subquadrate and smaller spots, and following, two large subquadrate patches, the last usually presenting a brown indentation on the outer side; a large quadrangular discal spot, between which and the third, fourth and fifth of the transverse band, are a small dot, and two narrow streaks; above the discal spot are one or two small dashes, and below it two conical spots; the outer half of the costa has four or five linear spaces upon it.

Hind wings with a marginal and submarginal row of rounded spots, and a mesial band of five or six oblong bars; all the markings of the upper surface are white. Fringe white, cut with black at the end of the nervures.

Under surface primaries have the markings of the upper side, repeated and enlarged; ground color pale olive brown.

Secondaries pale olive brown, lighter towards the base; a curved black line on the projecting shoulder, terminating in an enlarged knob; two transverse white maculate bands; one near the base of three spots, edged posteriorly with brown lines, the other is mesial, of irregular outline, and bordered with black lines on both sides; a submarginal and a marginal series of white lunes, surmounted by darker lines; abdominal area white, with a dark marginal line and projecting shadow at the anal angle. Expanse 1.20 inches.

Hab.—Rocky Mountains, Colorado Territory. (Coll. Tryon Reakirt.) "Mexico, near Vera Cruz." Wm. H. Edwards.

Most probably an alpine modification of the common *Pyrgus oileus*.

34. *PYRGUS MACAIRA*, nov. sp.

Male. Upper surface pearly white, apex of primaries strewn with dark brown atoms, with indistinct traces of an interior submarginal line; base of

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both wings heavily powdered with radiating black atoms; excepting this, the secondaries are immaculate; fringe brown, darkest on the primaries.

Underneath the primaries have a trapezoidal brownish space at their apex, behind which there is a transverse band, widening upon either margin. Secondaries have a very broad dark griseous-brown terminal band, commencing just before the apex, and ending at the submedian nervure; there is also a triangular baseo-costal patch, divided into three parts by white lines, the two outer are sometimes coalescent, and an oblong bar extending down the submedian vein, seemingly composed of three sections, of which the basal is linear; the second and largest, and the third, somewhat less, are rounded, quadrangular and triangular in different individuals; the interior portion of the wing—the area contained within these markings—is obscured with dusky atoms; the abdominal margin is aligned with brownish griseous.

Body above brownish black, beneath whitish; antennæ above dark brown, incompletely annulated with white, underneath paler, club ferruginous; alar expanse 1—1.15 inches.

Female. Pearly white; fore wings pearly white; a brownish black space at the apex, interior to this, two transverse bands; and a submarginal row of connected lunule, all of the same color. Hind wings with a narrow terminal black line, and a submarginal lunulate band usually reduced to two lunules on the middle of the outer margin, sometimes, though rarely, complete; short black lines run up the veins from the outer margin; fringe brown upon the fore-wings, soiled white upon the hind wings.

Underneath as in the male, the fore wing markings much plainer; those upon the secondaries very indistinct, and the terminal border is considerably widened; body and antennæ the same; alar expanse 1.37—1.45 inches.

Hab.—"Mexico, (near Vera Cruz)." Wm. H. Edwards.

Orizaba. (Coll. Tryon Reakirt.)

35. CARCHARODUS MAZANS.

Upper surface purplish brown, strewn with grayish white points; three transverse dark brown bands extending from the primaries' costa to the abdominal margin of the secondaries; the first is at two-fifths the length of the wings; the second and broadest at four fifths, and the third is terminal. Interior to the second are three small white spots; two, close together, are near the costa, the other slightly below the middle; fringe brown; wings strongly scalloped and indented; expanse 1 inch.

Underneath brown; the markings reproduced very indistinctly; body and antennæ brown.

Hab.—"Mexico, (near Vera Cruz)." Wm. H. Edwards.

36. ERESIA SYDRA, nov. sp.

Wings of the shape of *E. Otanes*, Hewits. Upper surface dark brown; base of both wings reticulated with indistinct rufous lines; three incomplete rufous lunulate lines extending a short distance only from the inner margin of the secondaries; on the primaries a small yellowish white spot near to and above the middle of the outer margin, between which and the inner angle there are two indistinct rufous yellow spots; expanse 1.25 inches.

Underneath dull umber-brown, with a purplish brown border on the outer margin; the spots of the upper side reproduced, and dark brown waved lines towards the base. Secondaries paler, shaded with grayish purple and purplish brown; several waved lines toward the outer margin, above which a series of indistinct ocelli, followed by a row of connected lunulæ, between which and the base are numerous zigzag and curved lines; there are but slight chromatic variations over the surface; prominent shadings only on the costa, near the apical angle and along the outer margin.

Hab.—"Mexico, (near Vera Cruz)." Wm. H. Edwards.

Related to *E. otanes*, Hewitson.

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37. *PIERIS LENORIS*, nov. sp.

Male. Upper surface sulphur yellow, a narrow black line at the apex of the primaries.

Underneath the secondaries and apical portion of the primaries vivid orange ochreous; posterior portion of the primaries as above. On the hind wings there are two grayish black spots on the costa, and another below the cell at the exertion of the first median veinlet. Wings shaped as in *Pi. Margarita*; expanse 2.35 inches.

Hab.—"Mexico, (near Vera Cruz)." Wm. H. Edwards.

Allied to *Pi. isandra*, Boisd.

38. *PIERIS PASION*, nov. sp.

Upper surface chalky-white, immaculate.

Under surface: fore wings' apical area and hind wings suffused with pale creamy ochraceous, otherwise as above; upon the secondaries are four narrow transverse greenish-gray lines; two respectively running from the upper thirds of the first and second subcostal veinlets to the costa; the third starts at the upper fourth of the submedian vein, bounds the lower portion of the cell, is discontinued in the lower, and reappears in the upper disco-cellular interspace; the fourth, between the last and the margin, is composed of two connected segments, rarely with a part of a third, all being contained within the median interspaces; the nervules here and upon the apex of the primaries are outlined in the same color; expanse 2.25—2.40 inches.

Hab.—"Mexico, (near Vera Cruz)." Wm. H. Edwards.

The ornamentation of the under side approaches very nearly to some species of *Hesperocharis*.

39. *SYNCHLOE ARDEMA*, nov. sp.

Female. Upper surface black; fore wings with a waved row of seven spots across the apical half of the wing, an abbreviated row of four white spots within these, running down from the costa, and an isolated spot, opposite the fifth of the first row, between it and the outer margin, all white; two pale luteous spots in the middle and lower median interspaces. Hind wings black, rarely with an indistinct orange brown shade across the disc; fringe black, spotted with white.

Underneath: fore wings the same, with the enlargement of the white spots, the addition of two submarginal lunes, of two spots within the cell, and of an orange tawny streak at the base of the costa. Hind wings with a sub-basal band of four spots; a narrow mesial band extending from the costa to the submedian vein, and a marginal series of lunes, all ochreous; intermediate between these last a series of six rounded white spots; a tawny orange spot near the anal angle; expanse 1.87 inches.

Body and antennæ black, the latter annulated with white; palpi streaked with whitish; legs tawny orange.

Hab.—"Mexico, (near Vera Cruz)." Wm. H. Edwards.

I regard both this and the *S. tellias*, of Bates, as local modifications of *S. lacinia*, Hübner.

40. *NEONYMPHA XICAQUE*, nov. sp.

Upper surface pale brown; fore wings with a broad dark brown terminal border; two narrow transverse waved and angulated lines, one extending across the wing just beyond the cell, the other contained within the cell; in the upper portion of the area, enclosed between the first and the marginal band, there are two rounded black spots, of which the anterior is the largest.

Hind wings with two mesial, strongly angulated red-brown lines, of which the portion of the upper one nearest the abdominal margin is usually obsolete; following these is a series of six rounded black spots, of which the first and third are the least, and the second is sometimes prolonged posteriorly, the sixth is usually wanting; the margin presents three continuous red-brown

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lines, obscured by a darker shade towards the apex; of these the two outer conform in outline with the indentations of the margin, the interior presents a lengthened arc from the abdominal margin to the third median veinlet, between which and the costa it is thrown into three shorter curves.

Fringe brown and white alternately; expanse 1.75 inches.

Underneath pale brown, darker towards the base, suffused with fuscous; two continuous broad red-brown lines extend from the subcostal vein of the fore to the abdominal margin of the hind wings; following these are two ocelli upon the first, and six upon the latter, all black, pupilled with white, and surrounded by reddish brown rings; of these the first upon the primaries is much the largest, the second upon the same, and the third upon the secondaries, minute and rather indistinct, the two apical ones of the latter closely approximating, and their other three at equal distances apart—all these five of nearly the same size; the border of the primaries is replaced by three narrow lines, and those upon the secondaries remain as on the upper surface; the area enclosed between the inner mesial line, and the base is, upon the secondaries, much darker than the rest of the surface.

Body brown; antennæ brown with incomplete pale annulations; club whitish beneath.

Hab.—"Mexico, (near Vera Cruz.)" Wm. H. Edwards.

More nearly allied to *N. canthus*, L., than any other of its congeneric associates, but still very distinct.

41. *THECLA JALAN*, nov. sp.

Female. Upper surface white glossed with black; a dark olive brown shade occupying the apical area and extending along the costal and outer margins of the primaries.

Secondaries bordered with a narrow black line, preceded by a white one as far as the submedian vein; interior to this a broad olive brown band, running from the costa down to the second median vein, thence to the margin bright orange, containing a small black spot in the first interspace, and also on the anal lobe, upon which there are some violet atoms; two black tails of equal length, the uppermost being tipped with white.

Underneath pure white; on the primaries four broad transverse olive brown bands, including the marginal, all tapering towards their inner margin; a pale orange spot at their base.

Secondaries with seven convergent and tapering bands, six of which unite in a waved black line that covers the large orange anal spot; this contains three black spots, of which the one at the anal angle is much the largest, and surmounted by a white ray.

Body blackish above, yellowish white beneath; head with an orange frontlet; first and second articles of the palpi white, the third black; antennæ black; expanse 1.45 inches.

Hab.—"Mexico, near Vera Cruz." Wm. H. Edwards.

42. *GONIOLOBA POYAS*, nov. sp.

Male. Upper surface dark olive brown, with long greenish hairs on the abdominal margin, and covering the body. Fore wings with a large tri-partite orange-ochreous spot about the end of the cell, interior to, and obliquely below which, there is an oblong sexual spot, of closely appressed grayish white scales.

Secondaries immaculate; a bright yellow fringe extends from the costa to the first median vein; for the remaining distance the cilia are brown.

Underneath, apex of primaries tinged with purplish, the sexual mark is wanting, but there is a bright yellow spot connecting the upper ochreous one with the costa. Secondaries underneath, as above, save that the yellow color of the fringe extends slightly over the edge of the wing.

Wings shaped as in *G. tityrus*, Fab., but the anal lobe is more obtuscd; expanse 1.75—2 inches.

Body brown, clothed with long hairs; anus encircled with long, bright yellow hairs; legs reddish; antennæ black, under side of club bright yellow.

Hab.—Brazil. (Coll. Tryon Reakirt.) "Mexico, near Vera Cruz." Wm. H. Edwards.

43. *THECLA CESTRI*, nov. sp.

Male. Upper surface brown, glossed with slaty-blue around the body; a large velvety-black sexual mark on the primaries, and two, rarely three, smaller black spots on the outer margin of the secondaries towards the anal angle; each of these is preceded by a bluish gray ray; there is also a narrow terminal black line. Fringe of the primaries brown and white alternately; that of the secondaries white in the middle, and brown at either angle.

Expanse 1—1.13 inches; margin of fore wings sinuated; of the hind wings rounded, and slightly lobed at the anal angle.

Underneath: primaries dull brownish-olivaceous, tinged with yellowish, basally; a sinuated transverse row of six brown or black lunes runs down from the costa, midway between the cell and the outer margin, beyond these the space is occupied with gray shades, containing a marginal row of oblong brownish dashes, of which the nearest to the inner angle is most distinct.

Secondaries grayish, transversed by numerous waved and lunulate lines and rows of spots; a subbasal row of five extending to both margins, of which the first four are orbicular, and the fifth lunulate; of these the second from the costa is the largest; a mesial series likewise stretching to both, and diminishing towards the abdominal margin; both of these rows are yellowish-brown, edged posteriorly with blackish curved lines; from the upper middle of the central one, a diffused shade of the same color extends towards the outer margin; on the upper angle there is a large lune, followed by several smaller ones, and towards the anal angle the two or three black spots of the upper surface are reproduced.

Body brown above, clothed with long slaty-blue hairs, whitish beneath; antennæ annulated with black and white; club black, tipped with yellowish brown.

Female. The lower half of the secondaries above is bluish gray, containing three marginal black spots, and underneath the markings are reduced in size and become paler. Expanse .95 inches.

Hab.—"Mexico, near Vera Cruz." Wm. H. Edwards.

44. *THECLA JUICHA*, nov. sp.

Female. Upper surface brownish black, glossed with bluish gray on the posterior portions of both wings, but slightly upon the primaries, largely so on the secondaries; a narrow terminal black line edges the outer margin of the latter, preceded interiorly by a pale bluish white line; a single tail, long, black tipped with white. Fringe of primaries orange brown; of the secondaries yellowish-ochreous as far as the tail, afterwards bluish gray. Expanse 1.25 inches.

Underneath: primaries brownish gray, suffused with purplish at the base and towards the apex; a short narrow discal arc, an oblong curved bar between it and the base, an irregular curved broad band beyond the discal arc, and a submarginal series of lunulæ, all dark brown; the second and last of these are edged with white interiorly, the third exteriorly, and the discal curve on both sides; the outer margin presents a large ochreous patch.

Secondaries, costa and posterior portions purplish gray, the remainder pale ochrey-yellow; four transverse lines, all dark ochrey-brown on the anterior half, and olive brown or black edged with white on the posterior half of the wings; the first and third are most distinct, these and the fourth extend from margin to margin, while the second is simply a discal curve; some shining orange brown atoms occupy the anal angle.

Body black above, clothed with bluish gray hairs, yellowish-white beneath;

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the tibiæ and tarsi are incompletely annulated with black and white alternately, but in sections of unequal value.

Hab.—"Mexico, near Vera Cruz." Wm. H. Edwards.

45. *THECLA YOJOA*, nov. sp.

Female. Upper surface, brownish, bluish gray on the hind portion of the secondaries; these are margined by a narrow black terminal line, above which towards the anal angle are four rounded black spots of which the third is the largest, and surmounted by a yellow crescent; a long tail proceeds from the extremity of the first median veinlet.

Under surface pale brownish-gray; a transverse, nearly straight line runs across the primaries from the costa to the first median veinlet, midway between the cell and the outer margin; the area beyond this is irrorated with whitish, upon which is superimposed a double row of marginal spots; also a white discal streak. Secondaries with a similar transverse line and discal arc, the first broken into three portions, each of which forms an almost right line; the upper is equal to the other two combined, and which are obliquely below and interior to it, as is also the lower to the middle one; an indistinct series of marginal ocelli, covered by a continuous row of lunulæ,—the first and third from the anal angle are dark brown, and surmounted by a yellowish lune. Expanse 1.13 inches.

Antennæ ringed with black and white; club tipped with ferruginous.

Hab.—"Mexico, near Vera Cruz." Wm. H. Edwards.

46. *THECLA ISTAPA*, nov. sp.

Female. Upper surface brownish, bluish-gray on the hind portion of the secondaries; these are margined by a narrow black terminal line, above which towards the anal angle are four rounded or lunulate black spots, of which the last two are the largest; a slender tail proceeds from the extremity of the first median veinlet.

Under surface pale brownish-gray; an obsolete double row of brownish lunules, separated by whitish crescents along the outer margin of the primaries; within, a curved row of six dark brown spots, edged exteriorly with white.

Secondaries have a brown discal arc, a dark brown spot within, and another above the cell, both ringed with white; beyond the cell a sinuated row of dark brown streaks and dashes, edged posteriorly with white; following these is a series of white sagittate marks, and a marginal row of indistinct brown ocelli, ringed with white. The second from the anal angle is black, covered by a luteous crescent; there is also a small black spot on the anal lobe, similarly surmounted. Expanse .85 inch.

Body and antennæ as in *Th. yojoa*.

Hab.—"Mexico, near Vera Cruz." Wm. H. Edwards.

Very closely allied to the preceding species, especially upon the upper surface; underneath, however, the differences are considerable.

47. *ERYCIDES LILEA*, nov. sp.

Upper surface shining blue-black, irrorated with lustrous green particles over the basal area and the body; a large fulvous red costal spot on the primaries, cut by the sub-costal vein; outer margin of both wings, including the anal angle of secondaries, fringed with white hairs, especially long upon the latter.

Underneath as above, but destitute of the green irrorations. Expanse 2.25 inches.

Body blue-black, the palpi, excepting the terminal joint, and a collar, fulvous-red; antennæ black.

Var. a; the abdominal margin is fringed with dark brown hairs, encroaching slightly upon the white anal ciliæ.

Hab.—"Mexico, near Vera Cruz." Wm. H. Edwards.

A local race of the well-known *Erycides palemon*.

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48. *GONILOBA AZUL*, nov. sp.

Upper surface dark brown; basal third of both wings brilliantly glossed with shining blue; on the primaries, a short, translucent-white costal bar, towards the apex cut into five spots by the subcostal veinlets and radials; a broad mesial, transverse, transparent, white band, composed of six spots, extends from the inner third of the costa to near the outer margin, a short distance above the inner angle.

Underneath brown, with a darker median shade on both wings; markings of primaries remain the same; a yellow spot at their base, and beyond, as far as the central transverse band, glossed along and below the costa with shining blue.

Costa of secondaries broadly white at the base, and tapering towards the middle, there terminating; a small brown spot at the shoulder, before which it is faintly yellowish. Expanse 2.5 inches.

Body brown, clothed above on the thorax with shining blue hairs, below with ochreous yellow; abdomen brown, the segments marked with blue hairs above and brown below. Head and collar lustrous green; palpi yellowish-white. Antennæ black.

Hab.—"Mexico, near Vera Cruz." Wm. H. Edwards.

49. *LEPTALIS MITA*, nov. sp.

Male. Above sulphur-yellow; fore wings with a black outer margin, broadest at the apex, there extending along the costa a little more than quarter its length, and terminating in a rounded knob, resting upon the first median veinlet; the interior outline of this marginal band is sinuated, and shaped much as in the allied species *kollari* and *licinia*, presenting two interior, deeply curved indentations, and a short, nearly straight line on the costa; this border also contains in its upper part an oblique yellow bar, touching the costa, and rounded posteriorly. Basal portion of costa powdered with black atoms; a short oblique black bar runs to the sub-costal vein, at about the middle of the margin.

Secondaries immaculate. Expanse 1.87 inches.

Underneath sulphureous; the outer portion of the black margin disappears, leaving only a transverse apical black belt, extending to neither margin; the black costal bar remains, and there are some continued black atoms in the cell below it.

Secondaries present a transverse blackish ray below the cell, which reaches to neither edge.

Body: thorax above black, covered with yellowish-green hairs, below yellow; abdomen yellowish-white; antennæ black, with white annulations; club purplish-brown.

Hab.—"Mexico, near Vera Cruz." Wm. H. Edwards.

Wings shaped as in *Lept. licinia*; of the described species, it approximates most nearly to the *Lept. isodrita*, Boisd., of Brazil, of which it is probably a northern modification.

50. *ACHLYODES HEWITSONIUS*, nov. sp.

Upper surface: primaries grayish brown, flecked with spots, and crossed by lines of paler hue; a dark brown terminal line along the outer margin, followed by a right line of pale grayish brown, which runs obliquely inwardly from the apex, becoming lost in the discal shades; then a large apical triangular fulvous-brown patch, with the base placed on the costa, and an oblique band of the same color running from the lower portion or apex of the triangle down to the middle of the inner margin, the veins and veinlets crossing both becoming dark brown during their passage; a large interior trapezoidal patch, darkest at either end, extends from the costa to the lower part of the cell, and a subbasal transverse band stretches from the subcostal to the submedian vein, both fulvous brown.

Secondaries ochraceous, more brownish on the abdominal margin, and

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tinged with orange towards the costa; a terminal brown line as on the fore wings; a narrow discal bar, a broad belt across the middle of the cell, connected above with two equally broad spots, both extending to the costal nervure, and commingling below with the dark abdominal shades; an irregular transverse band, twice bent at right angles near its middle, beyond the cell, extending from the first subcostal veinlet to the submedian vein; all dark brown; expanse 2.5 inches.

Underneath the primaries are ochreous, paler towards the outer margin, and with an ashy apical spot; the markings of the upper surface are almost obsolete.

Secondaries dull orange brown; markings as above, but very indistinct; the abdominal and apical areas are strewn with ashy atoms.

Antennæ black, ochraceous beneath.

Hab.—"Mexico, near Vera Cruz." W. H. Edwards.

This, most beautiful as well as one of the largest species of its genus, does not assimilate closely with any of its associates.

I have many other new species of this genus, which I hope to figure at some future time; it is impossible to describe them.

At the time that I wrote the "Notes upon Exotic Lepidoptera," &c., I had had no opportunity of consulting any of Dr. Felder's numerous writings in the "Wiener Entom. Monatschrift." I have now to regret having redescribed several of his species; an error which, however unfortunate, from uselessly multiplying difficulties in the correct determination of species, is scarcely to be avoided when two Entomologists are working upon the same subject at the same time. I append their corrected nomenclature, together with some other synonymical rectifications.

PAP. SEMPERI, Felder.

Pap. semperi, Felder, Wien. Ent. Monatschrift v., p. 297 (1861).

" " " " " " vi., p. 282 (1862).

" Zool. d. Novara Exp.

Atrypa erythrosoma, Reakirt, Proc. Ent. Soc. Phil., iii., p. 447, n. 2 (1864).

PAP. DEDALUS, Boisd.

Pap. dedalus Felder, Wien. Ent. Monatschrift, v., p. 298 (1861).

" Zool. d. Novara Exp.

Pap. palinurus, Fab., Reakirt, Proc. Ent. Soc. Phil., iii., p. 463 (1864).

PAP. HYSTASPES, Feld.

Pap. hystaspes, Felder, Wien. Ent. Monatschrift, vi., p. 283 (1862).

" Zool. d. Novara Exp.

Pap. varasi, Reakirt, Proc. Ent. Soc. Phil., iii., p. 465 (1864).

PAP. LEDEBOURIA, Esch.

Pap. Horsfieldii, Reakirt, Proc. Ent. Soc. Phil., iii., p. 476 (1864).

PAP. GORDION, Felder.

Pap. gordion, Feld., Zool. d. Novara Exp.

Pap. euryptylus, L., Reakirt, Proc. Ent. Soc. Phil., iii., p. 481 (1864).

PAP. EUPHRATES, Felder.

Pap. Euphrates, Felder, Wied. Ent. Monatschr., vi., p. 383 (1862).

" Zool. d. Novara Exp.

Pap. Moorei, Reakirt, Proc. Ent. Soc. Phil., iii., p. 485 (1864).

LEPTOCIRCUS DECIUS, Felder.

Lept. decius, Felder, Wien. Ent. Monatschr., vi., p. 284 (1862).

" Zool. d. Novara Exp.

Lept. meges, Zink., Reakirt, Proc. Ent. Soc. Phil., iii., p. 494 (1864).

1866.]

PAPILIO CALELI, Reakirt.

Pap. alcamedes, Felder, Zool. d. Novara Exp., p. 36, n. 26, t. vii., f. c. (1865).

Hab.—Guatemala. (Coll. Tryon Reakirt.)

Mexico. (Coll. Entom. Soc.)

New Granada? (Coll. Felder.)

A species of considerable range, and presenting slight modifications throughout, which, however, are not local or confined to particular sections. These are well expressed by Dr. Felder, l. c., p. 27, and may be briefly stated thus.—In the varying size of the white or yellowish white spot between the two last median veinlets of the fore wings, and also in the width of the subtriangular green band; in the presence of one or two greenish streaks of different lengths within the cell above the white spot, and in the longer or shorter red spots upon the hind wings.

PAPILIO TONILA, Reakirt.

Pap. aristomenes, Felder, Zool. d. Novara Exp., p. 38, n. 27, t. viii., f. a. (1865).

Hab.—Guatemala. (Coll. Tryon Reakirt.)

Mexico. (Coll. Entom. Soc. and Felder.)

The only difference between Dr. Felder's excellent figure, and the specimens in my possession, and the cabinet of the Society is, that his *aristomenes* has a white dash above the subcostal vein of the primaries—absent in all which I have seen. I do not doubt but that they are identical. I do not believe that *tonila* is the ♀ of *caleli*, as indicated by Dr. Felder in his *Species Lepidopterorum*, p. 296, n. 107 (1864); it is more nearly related to the ♀ of *mylotes*, Gray, than *caleli* is to the ♂ of that species.

Pap. caleli and *tonila* belong to a group of nearly allied forms of peculiar facies, all inhabiting the northern parts of South, or the tropical portions of North America; their co-members are *mylotes*, Gray, *timias*, Dblly., and *eurimedes*, Cram.; the last, possessed of the greatest range, is most probably the parent stock of the other and segregated species.

PAPILIO GUNDLACHIANUS, Felder.

Pap. Gundlach., Feld. Verh. d. Zool. bot. Gesellsch. in Wien, p. 294, n. 75 (1864).

Pap. Columbus, Gundl. Herr. Sch. Corr. Bl. Zool. Min. Vereins, xvi., p. 141 (1862).

Not *Pap. Columbus*, Hewits. Trans. Ent. Soc. Lond., n. ser., i., p. 98 (1851.)

Pap. Grotei, Blake, Proc. Ent. Soc. Phil., iv., p. 313 (1865.)

Description of the Hot Springs of Soda Creek, their location, number, temperature and altitude, and the Geological features of the surrounding locality; together with the remarkable discovery of a human skeleton and a fossil Pine Tree in the Boulder and Gravel formation of Soda Bar, Oct. 13th, 1860.

BY E. L. BERTHOUD, C. E.

Soda Creek is in Long: 105° 40'. Lat. 39° 35'. Approx. altitude above the sea 6570 feet.

Time of observation 10 A. M., Oct. 13th, 1860. Wind W. S. W. Sky cloudless. Therm. in air 57° F. Temperature of Soda Creek 45° F.

1st.	Spring temperature of water	98°	F.
2d.	"	"	99° "
3d.	"	"	55° "
4th.	"	"	54° "
5th.	"	"	55° "
6th.	"	"	91° "
7th.	"	"	90° "

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